

Measurement of the absolute transition frequency of the $S_{1/2}$ - $D_{5/2}$ transition in $^{40}\text{Ca}^+$ and $^{43}\text{Ca}^+$

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We present an absolute frequency measurement of a single, trapped $^{40}\text{Ca}^+$ ion at the 10^{-15} level, where a frequency comb, referenced to Cs clock, is used to measure the frequency of the 4s $S_{1/2}$ - 3d $D_{5/2}$ quadrupole transition at $411\ 042\ 129\ 776\ 393.2 \pm 1.0$ Hz. This is the most accurate measurement of Ca^+ at present. An analysis of the estimated systematic shifts is given as well as a presentation of techniques for measuring certain systematic shifts with a pair of two ions in a linear ion trap.